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ABSTRACT

Three methodological improvements were incorporated into a two-channel study that tested the relationships between communication cues, dynamic/conversational delivery styles, and four dimensions of source credibility--dynamism, competence, evaluation, and trustworthiness. The methodological improvements included a molar rather than molecular examination of communication activity, the systematic elimination of nonverbal, verbal, or vocal communication channels to produce "true" two-channel stimulus conditions, and the inclusion of nonverbal/verbal as well as nonverbal/vocal and verbal/vocal data in the two-channel research design. Following validiation of the stimulus materials--establishing their dynamic/conversational differences--266 undergraduates responded to one of the stimulus conditions by completing semantic differential scales of a speaker's credibility and the speech's verbal content. The results, supporting three of the four research hypotheses, reveal that the various channel cues and styles of delivery are perceived differently when judging a source's credibility than when judging the verbal content of a speech. The results also demonstrate the value of the two-channel research protocol with the incorporated improvements in methodology. (RL)

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THE EFFECTS OF TWO-CHANNEL COMMUNICATION AND STYLE ON PERSONS' PERCEPTIONS OF SOURCE CREDIBILITY AND VERBAL CONTENT OF A SPEECH*

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THE EFFECTS OF TWO-CHANNEL COMMUNICATION AND STYLE OF PERSONS' PERCEPTIONS OF SOURCE CREDIBILITY AND VERBAL CONTENT OF A SPEECH

ABSTRACT

In an effort to explore the overall relationship among verbal cues, vocal cues, and nonverbal cues on persons' perceptions of a source, a number of studies have employed two-channel stimulus materials. These studies have produced inconsistent results. These inconsistencies, however, appeared to be a function of different theoretical orientations which attempt to explain different phenomena rather than a function of the two-channel research protocol per se. A comparison of these studies revealed considerable variation in their units of analysis, along a molecular-molar continuum, at the theoretical, conceptual, and operational levels which explained their inconsistent results.

Three improvements in the units of analysis at the methodological level were incorporated into the present two-channel study to test four hypotheses. The four hypotheses examined the relationships among two-channel communication cues, style of delivery and four dimensions of source credibility: dynamism, competence, evaluation, and trustworthiness. In addition, a research question explored the relationship between communication channels and evaluations of the verbal content of a speech. The results supported three of the four hypotheses. The results revealed that the various channel cues and styles of delivery are perceived differently in making judgments about a source's credibility and the verbal content of a speech. In addition, the utility of the two-channel research protocol is discussed.

Source credibility, a set of listener perceptions about a source's believability or acceptability, has been well established in the literature as an important communication variable. A number of studies have indicated that sources perceived as highly credible were also more effective in persuasion (Haiman, 1949; Hovland and Weiss, 1952; Hovland, Janis, and Kelly, 1953, and McGinnies, 1973). In efforts to discover the basis of persons' perceptions of speaker, several researchers have suggested relationships between source credibility, style of delivery, and nonverbal cues. These studies have consisted of isolating vocal cues or nonverbal (facial and/or body) cues into single channel stimulus materials in order to discover their effects on persons' perceptions of a speaker.

Pearce and Conklin (1971) and Pearce and Brommel (1972) discovered that differences in the style of delivery and vocal cues affected subjects' ratings of a source's credibility. Mehrabian and Williams (1969) reported that persons perceived more speech volume, higher speech rates, higher gesticulation rates, more facial activity, and more eye contact as positively related to persuasiveness. While these studies revealed that vocal and nonverbal channels alone influence perceptions of a speaker, they raise an interesting question concerning the overall relationship among verbal cues, vocal cues, nonverbal cues, style of delivery, and source credibility in a persuasive situation.

Researchers in the late 1960's and early 1970's attempted to construct models of the relative importance of particular channels of communication to specified effects of the message. These models were based upon two-channel stimulus materials (i.e., verbal-vocal or vocal-nonverbal channels) presented simultaneously to subjects. Apparent inconsistencies in results have emerged from these studies. Mehrabian and his associates reported that subjects relied

most on nonverbal cues (55%), less on vocal cues (38%), and least on verbal cues (7%) in judging a source's affective state (Mehrabian and Weiner, 1967; Mehrabian and Ferris, 1967, and Zaidel and Mehrabian, 1969). In contrast, Vande Creek and Watkins (1972) concluded that persons prefer verbal cues (64%) as opposed to nonverbal cues (20%) in making similar judgments. Bugental (1974) discovered that subjects employ a rather complex channel discounting process using credibility judgments of vocal tone versus verbal content. Markel and his associates (Markel, 1964 and Markel and Robin, 1965) and Hart and Brown (1974) demonstrated that subjects make separate judgments about a speaker's personality from different behaviors in different channels. In particular, these researchers noted that subjects' "Evaluation" judgments were based on verbal stimuli, while "Potency" judgments were based on vocalic stimuli. The relationships among verbal cues, vocal cues, nonverbal cues, and persons' perceptions of a source appears to be inconsistent. For example, while Mehrabian found subjects use verbal cues only 7% of the time to make "Evaluation" judgments, Markel et al and Hart and Brown reported subjects mainly use verbal cues to make similar judgments. Mehrabian et al stated that persons prefer nonverbal cues in determining a source's affective state, while Vande Creek and Watkins noted that subjects preferred verbal cues as opposed to nonverbal cues. The inconsistencies in these results appear to have produced an abandonment of the two-channel research protocol in communication literature.

A more in-depth analysis of two-channel research, however, reveals that the consistencies in results appear to be a function of different theoretical orientations which attempt to explain different phenomena rather than a function of the two-channel research protocol per se. The two-channel studies vary considerably in their units of analysis at the theoretical, conceptual, and methodological operationalization levels. These variations may be described relativis-

tically along a molecular-molar continuum (Pearce, 1977). A molecular perspective assumes the best way to understand complex phenomena is to reduce it down into smaller, more manageable parts, whereas a more molar approach observes the phenomena as a more complex whole. In short, the present study will illustrate the facticity of the theory-dependence of observations and show how recognition of this can explain apparent inconsistencies in the research literature.

While the results of two-channel communication studies are divergent, they need not be viewed as contradictory. Two divergent theoretical perspectives are revealed in this research literature. Mehrabian et al, Vande Creek and Watkins, and Bugental employed the "double-bind theory" of schizophrenia (Bateson, Jackson, Haley, and Weakland 1956) as the theoretical framework for their two-channel communication studies. Markel et al and Hart and Brown's two-channel studies are based on the more global theory of personality impression formation. While both theoretical perspectives assume persons form impressions of others from their verbal, vocal, and nonverbal cues, these theories differ in the types of personality impression formation processes they seek to explain. Comparatively, "double-bind theory" attempts to explain a specific type of personality impression formation process based on resolving inconsistencies among a source's communication channels (channel discounting process, Bugental 1974), while personality impression formation theory seeks to explain a wider range of personality impression formation phenomena. Briefly, "double-kind theory" may be viewed as a more molecular, special case theory of the more molar personality impression formation theory. While the two theories are not necessarily contradictory, they do not seek to explain equivalent phenomena.

The theoretical differences between the two lines of two-channel research

are reflected in the general type of research questions each posed. Mehrabian et al, Vande Creek and Watkins, and Bugental, based in "double-bind theory," generated research questions to examine the channel discounting process (Bugental, 1974) used by "normal" addressees to resolve inconsistent affective state cues between communication channels produced from a source. In other words, these researchers were interested in learning which channel cues subjects believed reflected a source's "true" emotional state and which channel cues they discounted as "untrue" when presented with inconsistent cues. On the other hand, Markel et al and Hart and Brown, grounded in personality impression formation theory, developed a set of research questions to explore addressees impressions of a source's personality developed from various cues from several channels. These researchers did not focus on a channel discounting process; instead, they focused on the relative contribution of two channels to overall personality impressions.

The divergence in research questions reflects two important differences in the conceptual units of analysis. First, while the "inconsistence resolution" two-channel studies have focused on perceptions of a source's affective state, the "impression formation" two-channel studies have focused on perceptions of personality. "Affective states" are much more molecular concepts than "personality" and are characterized by their transitoriness. Some research has shown that there is little or no relation between subjects' abilities to perceive speakers' emotional states and more enduring personality traits. Second, "inconsistency resolution" researchers have conceptualized communication as incongruent source cues between channels (e.g., positive facial cues versus negative vocal cues), whereas "personality impression formation" researchers have viewed most "natural" communication as consistent. As Hart and Brown have noted, inconsistent source cues may provide information that consistent

source cues do not provide.

Differences in the units of analysis between the two lines of two-channel research have not been isolated at the theoretical and conceptual levels however. The operationalization of these concepts at the methodological level has produced varying units of analysis not only between the two lines of study, but within the "inconsistency resolution" two-channel research. The operationalization of concepts into two-channel stimulus materials and into dependent measurement instruments have varied considerably along the molecular-molar continuum. Mehrabian and his associates operationally defined their two-channel stimulus materials from a relatively molecular perspective. Specifically, Mehrabian et al operationally defined the verbal channel as single words with three degrees of attitude (positive-neutral-negative), the nonverbal channel as black-and-white still photographs of facial expressions with three degrees of attitude, and the vocal channel as three degrees of intonation. From a more molar perspective, Vande Creek and Watkins presented their subjects with eighty 20 second video-taped segments of actors presenting inconsistent verbal and vocal (combined)-nonverbal cues. Unfortunately, these researchers did not isolate vocal cues from verbal cues nor were the types of nonverbal cues identified. Bugental also employed a more molar approach by operationally defining verbal-vocal two-channel stimulus materials as audio-taped messages of mothers addressing their children.

Dependent measures in these three studies may be described as molecular since all three employed only one scale to measure affective state judgments. Both Mehrabian et al and Bugental used a seven-point bipolar adjective "like-dislike" attitude scale while Vande Creek and Watkins employed a seven-point "calm-stressed" scale. The differences in results among these studies may be a reflection of the differences in their two-channel stimulus materials and

perhaps differences in scale selction which may represent different dimensions of judgment (McGinnies, 1974).

The two-channel "impression formation" researchers have employed more molar two-channel stimulus materials and dependent measures in comparison to the "inconsistency resolution" researchers. Both Markel et al and Hart and Brown used audio-taped recordings of speakers reading a prose passage. While the verbal content remained identical across treatments, vocal stimuli were varied. In addition, these researchers persented subjects with a greater array of scales which yielded multi-dimensional judgments as opposed to the uni-dimensional dependent measures used in the "inconsistency resolution" studies. Markel et al utilized a semantic differential technique which generated judgments in three dimensions: Evaluation, Activity, and Potency. Hart and Brown used a set of bipolar adjective scales developed by Preston and Brown which produced two judgmental dimensions: Competency and Benevolence.

A final methodological difference among the duties concerns the number of two-channel conditions employed in the studies. Markel et al, Hart and Brown, and Bugental investigated only the verbal-vocal two-channel situation. Mehrabian et al explored verbal-vocal and nonverbal-vocal two-channel conditions. Vande Creek and Watkins examined a verbal and vocal-nonverbal "two-channel" condition. None of the studies utilized the full three possible two-channel combinations.

This review of two-channel communication research suggests a number of interesting issues. First, the divergent results of these studies appear to be due to the theory-dependence of their observational or analytical units at the theoretical, conceptual, and methodological levels rather than due to the two-channel research protocol per se. If so, a two-channel methodological approach may be a valuable communication research protocol in addressing the

question of the overall relationship among communication channels (verbal, nonverbal, and vocal) and perceptions of a speaker. Second, a number of improvements appear to be necessary in the employment of this research protocol. Concepts under study should be operationalized into more molar independent and dependent variables. Each communication channel should be isolated from the other two channels as much as possible to avoid inter-channel contamination. Finally, all three possible two-channel conditions (nonverbal-verbal, nonverbal-vocal, and verbal-vocal) should be included in the design to allow for all possible comparisons. The present study will address these improvements in an attempt to suggest that the abandonment of the two-channel research protocol may be unfairly premature.

Communication Channels, Style of Delivery, and Source Credibility

The study of the relationships among communication channels, style of delivery, and source credibility has been traditionally based in personality impression formation theory. Citing the work of Allport and Cantril (1934), Addington (1969, 1971), and others, Pearce and Conklin (1971) examined the effects of vocalic aspects of style on perceived credibility. They operationally defined two delivery patterns (Bowers, 1965) by degree rather than kind: conversational delivery involved a relatively smaller range of inflections, a greater consistency of range and pitch, less volume, and generally lower pitch levels than did dynamic delivery. The results indicated that a speaker employing a conversational style of delivery was perceived as more trustworthy and more favorably evaluated than when he used a dynamic style. The speaker was perceived as more dynamic when he used a dynamic style of delivery than when he used a converstional style. The perceived competence of the speaker between the two delivery styles did not differ. A later study by Pearce and Brommel (1972) consisting of verbal and vocal channels replicated these findings.

However, Smith, Brown, Strong, and Rencher (1975) reported that competence ratings increased and decreased linearly with the rate of delivery. This finding suggests that competence ratings should be higher for a speaker employing dynamic as opposed to conversational delivery.

No studies have reported the nonverbal aspects of delivery styles and source credibility per se. However, Mehrabian and Williams (1969) found that when speakers were asked to increase their persuasiveness, they increased their amount of eye contact, their rate of head nodding, their rate of gesticulation, and their facial activity. In judging the persuasiveness of the communicators, subjects perceived more speech volume, higher speech rate, higher gesticulation rates, more facial activity, and more eye contact as positively related. Since speakers become more dynamic in their vocal styles, it is reasonable to assume they became more dynamic in their nonverbal styles, also. Hence, nonverbal delivery patterns may be perceived as more dynamic through an increased rate of gesticulations, greater facial activity, and increased eye contact in contrast to a conversational style of delivery.

The present study employed source credibility as a dependent measure. The dimensions of source credibility judgments have been the focal point of considerable research (Hovland, Janis, and Kelly, 1953); Berlo, Lemert, and Mertz, 1969-1970, McCroskey, 1966; Tuppen, 1974 and others). A collation of these and other such studies indicates that the number and type of factors in each study depend on scale selection and the statistical procedures used (Cronkhite and Liska, 1976). Although the methodological issues raised by Cronkhite and Liska are important, three factors or dimensions of source credibility generally appear in the literature to account for most of the variance regardless of the statistical or rotational procedures employed. These three factors are "Trustworthiness," "Competence," and "Dynamism" and they were used in this study in

conjunction with "Evaluation" scales a dependent measure of source credibility.

Hypotheses

Pearce and Conklin (1971) and Pearce and Brommel (1972) reported in their studies of vocalic communication that a speaker using a dynamic style of delivery was perceived as a more dynamic source than when he was using a conversational style. These findings generated the first hypothesis:

H_1: A speaker using a dynamic style of delivery will receive higher dynamism ratings from subjects than will the same speaker using a conversational style.

Markel et al (1964, 1965) and Hart and Brown (1974) discovered that "Potency" or "Competence" information was conveyed primarily by vocal cues. Smith et al (1975) reported that "Competence" ratings increased and decreased with the rate of delivery. This research suggested a second hypothesis:

H_2: A speaker using a dynamic style of delivery will receive higher competence ratings than will the same speaker using a conversational style.

Pearce and Conklin and Pearce and Brommel noted in their studies of vocalic communication that a speaker employing a conversational delivery pattern received higher evaluation and trustworthiness ratings than when he was using a dynamic style. Hypotheses three and four are based on these results.

H_3: A speaker using a conversational style of delivery will receive higher evaluation ratings from subjects than will the same speaker using a dynamic style.

H_4: A speaker using a conversational style of delivery will receive higher trustworthiness ratings than will the same speaker using a dynamic style..

Finally, Markel et al and Hart and Brown concluded their studies of verbal-vocal two-channel communication by stating that evaluation or benevolence judgments stemmed from content stimuli. Since this present study will employ identical verbal content, and interesting research question is posed:

R_1: What will be the relationship between various two-channel stimulus conditions, style of delivery, and evaluation of the verbal content of the speech?

Methods

Two-Channel Experimental Conditions

Two-channel stimulus materials were constructed through four audio-visual color motion picture films: (1) two unfiltered speech films (one representing a dynamic style of delivery and one representing a conversational style), and (2) two electronically filtered sound track films. The films with the filtered sound tracks were reprints of the unfiltered speech films making them identical with the exception of the verbal content of the speech. The filtered speech films were produced by using a Spencer-Kennedy Variable Electronic Filter set for low pass at 325 Hz with 36 dB/octave roll off making the verbal content unintelligible.

Prior to the employment of the films in an experimental setting, a validation procedure was conducted to ensure that the differences between the two styles of delivery represented in the films were accurate. A stimuli validation test consisting of a seven-point bipolar adjective "conversational-dynamic" scale and a five-point "unsatisfactory-satisfactory" scale was constructed. Eight trained speech professionals (five university and three high school speech instructors) observed two unfiltered speech films representing both styles of delivery and were asked to record their responses at the end of

each film. This procedure permitted the observers to judge each style independently. The presentation order of the two films, aribtrarily labelled "Style I" (Dynamic) and "Style II" (Conversational), was alternated between observers.

The results of the validation test revealed that the judges perceived the two delivery styles as different (Style I $\bar{X}$=5.50, Style II $\bar{X}$=3.13, t-test for correlated means t=4.77, $p < .05$). Thus, "Style I" could be labelled "Dynamic" and "Style II" could be labelled "Conversational." The judges also perceived both styles of delivery to be equally "satisfactory" (Style I $\bar{X}$=3.5, Style II $\bar{X}$=3.65, t-test for correlated means t=.284, $p > .05$). Both styles of delivery were perceived as different, yet equally "satisfactory."

Furthermore, the questionnaire asked each respondent to record his/her perceptions of speaker-controlled behaviors. The judges generally mentioned that the dynamic speaker used a great amount of emphatic gestures, considerable body action, "good" eye contact, and more vocal variety such as frequent pitch, rate, and volume variations. The respondents generally described the conversational speaker as presenting, in contrast to dynamic delivery, a relatively small range of inflection, a greater consistency of rate and pitch, less volume, and generally lower pitch levels vocally, reduced gesticulation, decreased facial activity, and reduced eye contact nonverbally. On the basis of these results, the films employed in this study were perceived by eight trained observers to represent two styles of delivery within the context of the operational definitions presented.

Each of the four films consisted of a professional radio actor delivering a speech adapted from an essay by Henry Steele Commager (1954) which strongly indicted a doctrine of states' rights. In a previous study, the verbal content of the speech was found to constitute an effective persuasive appeal (Pearce

and Brommel, 1972). The subjects received two-channel cue conditions using the following procedure: (1) nonverbal-verbal channel conditions--subjects observed the visual portion of the film with no sound and read a typewritten text of the speech; (2) nonverbal-vocal channel conditions--subjects viewed the visual and auditory portions of a filtered speech film; and (3) verbal-vocal channel conditions--subjects were presented only the auditory portion of an unfiltered speech film.

Dependent Variables

Subjects evaluated the speaker's credibility through a semantic differential questionnaire consisting of twenty-one seven-point bipolar adjective scales representing four dimensions of source credibility (Pearce and Conklin, 1971; Pearce and Brommel, 1972). These scales were: (1) Dynamism: aggressive-unaggressive, emphatic-hesitant, bold-timid, active-passive, energetic-tired; (2) Competence: trained-untrained, experienced-inexperienced, skilled-unskilled, qualified-unqualified; (3) Evaluation: masculine-feminine, warm-cool, pleasant-unpleasant, friendly-unfriendly, and (4) Trustworthiness: safe-unsafe, just-unjust, kind-cruel, clean-dirty, honest-dishonest, valuable-worthless.

Subjects evaluated the verbal content of the speech through a semantic differential questionnaire consisting of twenty-one seven-point bipolar adjective scales that previously have represented an evaluation dimension (Osgood, Suci, and Tannenbaum, 1957). These scales were good-bad, beautiful-ugly, progressive-unprogressive, sweet-sour, kind-cruel, clean-dirty, tasty-distasteful, valuable-worthless, pleasant-unpleasant, right-wrong, happy-sad, safe-dangerous, sacred-profane, intelligent-unintelligent, nice-awful, gentle-violent, fair-unfair, sane-insane, honest-dishonest, successful-unsuccessful, and healthy-sick.

The semantic differential scales on the questionnaires were randomly ordered and the poles alternated to control ordering effects and haphazard responses.

Design

A post-test only procedure was followed since the subjects were not acquainted with the speaker. Six possible independent variable conditions existed for two separate dependent variables (source credibility and evaluation of verbal content) which yielded two 3 (two-channel conditions) X 2 (style) factorial designs.

Subjects

Subjects were 266 (115 male and 151 female) undergraduate students enrolled in twelve sections of two introductory speech courses at a midwestern university during the fall and spring semesters of the 1976-1977 academic year. Each section was randomly assigned to one treatment by lot. 136 subjects evaluated the speaker's credibility while 130 subjects evaluated the verbal content of the speech. The number of subjects involved in each of the experimental conditions ranged from seventeen to twenty-six students.

Procedures

The experimental treatments were presented to the subjects during their regularly scheduled course session. The experimenter or an assistant read a brief introduction informing the subjects that they would be viewing a two-channel film treatment of an announced candidate for political office in another state. Following the introduction, subjects viewed the manipulated film treatment which lasted approximately seven minutes. Immediately following the experimental condition, the questionnaires were distributed to the subjects who required approximately three to five minutes to record their responses,

although no time limitations were imposed. Upon the return of all questionnaires, the subjects were debriefed.

Results

Two factor analytic solutions were computed: one for each dependent variable. Two criteria were utilized to aid in the interpretation of the factor matrices: (1) each factor must contain two scales with loadings of .50 or greater, and (2) each scale must have a loading of at least .40.

The subjects' responses to the source credibility scales were subjected to varimax rotation which yielded four factors interpreted as: Dynamism, Competence, Evaluation, and Trustworthiness (Table 1). Several findings differed from those expected. First, the "safe-unsafe" scale was perceived as a measure of evaluation rather than trustworthiness. Second, the "masculine-feminine" scale failed to emerge on any of the four factors as did the "just-unjust" scale. Third, three scales loaded on two dimensions of source credibility: (1) "informed-uninformed" and "qualified-unqualified" scales loaded significantly on both competence and trustworthiness factors, and (2) the "energetic-tired" scale emerged on the dynamism and trustworthiness dimensions. These differences may have resulted from problems involved in the semantic-differential technique: concept-scale interaction, concept-rater interaction, and/or rotational procedures employed (Heise, 1969; Heaps, 1972; Kubiniec and Farr, 1971, and Cronkhite and Liska, 1976). The three scales which loaded significantly on two factors may have been due in part to an assumption that several subjects expressed following one of the sessions. They assessed the speaker as involved (energetic) and knowledgable (informed and qualified) on his topic. A reasonable assumption is that a speaker perceived as qualified, informed, and energetic may also be perceived as trustworthy. The initial dependent variable was

modified to reflect the obtained factor analytic solution.

The subjects' responses to the verbal content of the speech were submitted to SPSS Principal Factor With Iterations: PA2 procedures. One principal factor labelled "Evaluation" emerged (Table 2). Since all twenty-one scales loaded significantly on this dimension, further rotations were unnecessary to clarify conceptualization.

Subjects' source credibility and content evaluation ratings were processed according to the factors extracted. The factor scores consisted of the sum of the subjects' ratings for those scales which loaded significantly on each factor. Source credibility ratings reflected the following potential ranges: (1) Dynamism ratings ranged from five to thirty-five, (2) Competence from six to forty-two, (3) Evaluation from five to thirty-five, and (4) Trustworthiness from six to forty-two. Evaluation of verbal content ratings ranged from twenty-one to one hundred and forty-seven. Two-way analysis of variance for unequal cell frequencies was utilized to test the hypotheses.

The results from the two-way analysis of variance test supported the first hypothesis that a speaker using a dynamic style of delivery would be perceived as more dynamic than when using a conventional style. Significant main effects

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Figure 1 about here

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for styles ($F=42.111$, $p < .05$) and two-channel cue conditions ($F=7.132$, $p < .05$) were recorded (Table 3). No significant two-way interaction emerged. A Newman-Keuls a posteriori comparison of means test revealed the styles to be significantly different in all three two-channel conditions (Table 4). Comparisons between two-channel cue conditions also demonstrated significant differences. The dynamic speaker appeared least dynamic in the nonverbal-verbal cue conditions and appeared most dynamic in the verbal-vocal two-channel condition.

When the speaker employed a conversational style of delivery, he received similar dynamism ratings in the nonverbal-verbal and nonverbal-vocal channel conditions, however both ratings were significantly less than the dynamism ratings received in the vocal-verbal conditions. Overall, the dynamic style of delivery was perceived as more dynamic in all three two-channel conditions, but was perceived as most dynamic in the verbal-vocal two-channel condition.

The second hypothesis that a speaker adopting a dynamic style of delivery would be perceived as a more competent source than when he spoke in a conversational style was partially supported by the results. A two-way analysis of

Figure 2 about here

variance revealed significant main effects due to styles ($F=6.566$, $p < .05$), but no significant main effects due to two-channel conditions (Table 5). However, a significant two-way interaction emerged also ($F=3.307$, $p < .05$). Post hoc analysis of the data indicated significant differences between the two styles of delivery in the verbal-vocal two-channel condition (Table 6). Apparently, a dynamic style maintained the speaker's perceived competence across the three two-channel conditions. Conversely, the speaker's competence ratings appeared to decrease linearly across the three two-channel conditions when he used a conversational delivery style. The subjects attributed the highest competence ratings to the speaker using a dynamic style of delivery in the verbal-vocal channel conditions providing only partial support for the second hypothesis.

The prediction that a speaker employing conversational as opposed to dynamic delivery would receive higher evaluation ratings was also partially

Figure 3 about here

supported. Differences in subjects ratings resulted from the main effects of styles ($F=6.105$, $p < .05$), two-channel conditions ($F=3.849$, $p < .05$), and a two-way interaction ($F=3.327$, $p < .05$) (Table 7). Differences between styles and two-channel conditions in the nonverbal-verbal and nonverbal-vocal conditions did not reach significance (Table 8). Significance did appear, however, between the two styles in the verbal-vocal two-channel condition. Conversational delivery maintained favorable subject evaluations across two-channel conditions for the speaker, while dynamic delivery reduced these ratings in the verbal-vocal conditions. Hence, the third hypothesis received only partial support.

Test results of the fourth hypothesis were contrary to expectation. Dynamic delivery generated higher trustworthiness ratings for the speaker than did a conversational style. Differences in subjects' trustworthiness ratings

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Figure 4 about here

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occurred because of the significant main effects of styles ($F=3.902$, $p < .05$) and a two-way interaction between styles and two-channel cues ($F=4.523$, $p < .05$). No significant main effect for two-channel cues occurred (Table 9). Post hoc analysis yielded no significant differences between the two styles of delivery or two-channel conditions in the nonverbal-verbal and nonverbal-vocal channels. However, a significant difference between the two styles arose in verbal-vocal two-channel condition (Table 10). Apparently, the dynamic style of delivery generated stable trustworthiness ratings for the speaker, while the conversational style produced significantly lower ratings in the verbal-vocal two-channel condition.

A two-way analysis of variance generated an interesting finding in an ex-

amination of the research question. While no main effects for styles or two-channel cue conditions on subjects' evaluation of the verbal content of the speech appeared, a significant interaction occurred between the two variables ($F=6.172$, $p < .05$) (Table 11). A posteriori comparisons revealed two signifi-

Figure 5 about here

cant differences between styles and between two-channel cues. When exposed to nonverbal-verbal two-channel stimulus materials, the subjects evaluated the verbal content more favorably when the speaker employed dynamic rather than conversational nonverbal delivery patterns. However, significant differences also emerged among two-channel cue conditions for the conversational style. Evaluation ratings of the verbal content were significantly lower in the nonverbal-verbal cue condition than in the other two-channel conditions. No further differences were revealed.

Discussion

This study attempted to make design improvements in the two-channel research protocol. First, the independent and dependent variables were operationalized in a more molar manner than in previous two-channel research. Instead of employing one word, one facial expression, or one vocal tone, the present study contained an array of verbal, nonverbal, and vocal cues in each channel so that the two-channel stimulus materials consisted of a seven minute color filmed message which was deemed as more representative of a persuasive address. Dependent measures consisted of two sets of bipolar adjective scales rather than one scale of judgment: one set represented the multi-dimensional nature of source credibility and one set represented uni-dimensional evaluations of the verbal content.

Second, each of the communication channels (nonverbal, verbal or vocal) was systematically eliminated to produce a "true" two-channel stimulus condition. This was important in preventing an inter-channel contamination of the results as in the Vande Creek and Watkins study. It has been demonstrated that each channel can be used by subjects for information and that a combination of two channels compared to a third will yield different results.

Finally, while previous two-channel research employed only verbal-vocal or nonverbal-vocal two-channel conditions, the present study used a full three two-channel combination design: nonverbal-verbal, nonverbal-vocal, and verbal-vocal two-channel conditions. A full three two-channel combination allowed for the comparison of each channel with the other two channels. It is possible, for example, that verbal cues are perceived differently when combined with vocal cues than when combined with nonverbal cues.

Three of the four hypotheses were supported by the results. The subjects rated a speaker using a dynamic delivery as opposed to conversational delivery to be more dynamic in all three two-channel conditions and more competent in the verbal-vocal two-channel condition only. Contrary to expectation, the subjects also perceived the source using dynamic delivery to be more trustworthy than when he employed conversational delivery, but only in the verbal-vocal condition. As expected, the subjects evaluated the speaker more favorably when he employed conversational rather than dynamic delivery, but again only in the verbal-vocal two-channel condition.

The data in this study revealed a number of interesting relationships among verbal cues, vocal cues, nonverbal cues, style of delivery, and perceptions of source credibility and evaluations of the verbal content of a speech in a persuasive situation. First, the verbal content of the speech appeared to the subjects as being dynamic regardless of the style of delivery used. In addition,

certain nonverbal behaviors such as more gesticulation, more facial activity, and more eye contact and certain vocal behaviors such as a wider range of inflections, a greater variation of range and pitch, more volume, and generally higher pitch levels appeared to have been interpreted as indicators of dynamism.

Second, while these dynamic nonverbal, vocal, and verbal cues enhanced the speaker's perceived dynamism, differences between dynamic and conversational styles of delivery in perceived competence and trustworthiness emerged in the vocal-verbal two-channel condition only. The data suggested that dynamic nonverbal, vocal, and verbal cues functioned to maintain competence and trustworthiness ratings, whereas conversational vocal cues and persuasive verbal cues decreased these ratings significantly. The reverse is true for subjects' evaluation ratings. Conversational nonverbal, vocal, and persuasive verbal cues functioned to maintain subjects' evaluation ratings, while dynamic vocal cues and persuasive verbal cues decreased these ratings significantly.

Finally, the results from the research question exploring the relationship between two-channel cue conditions, style, and evaluations of the verbal content of the speech are difficult to interpret. The interaction between two-channel conditions and style of delivery may have resulted from subject reactions to evaluating a channel to which they were not exposed (i.e. rating verbal content in the nonverbal-vocal condition). However, the results indicated that subjects' evaluation of the verbal content of a speech may be influenced by the nonverbal aspects of delivery style. Dynamic nonverbal cues appear to enhance subjects' evaluations of the verbal cues in situations where the audience has access to the verbal content of the speech, can see the speaker, but cannot hear the delivery. This interpretation seems warranted noting no significant differences in evaluations of the verbal content between the two styles of delivery in the nonverbal-vocal and verbal-vocal cue conditions.

The data of this study are also relevant to the role of each channel in communication. Neither Mehrabian and Ferris' (1967) weighted sum formula nor Markel's (1964) hypothesis was fully supported. According to the weighted sum formula, the speaker, regardless of style, should have consistently received the highest dynamism, competence, evaluation, and trustworthiness ratings in the nonverbal-vocal two-channel condition. This pattern does not describe the data. The speaker using dynamic delivery received the highest dynamism ratings in the verbal-vocal condition and maintained competence and trustworthiness ratings across the three two-channel cue conditions. Only evaluation ratings reflect the general pattern suggested by Mehrabian and Ferris, but not to the extent of the weighted sum formula. On the other hand, the speaker using a conversational style received the highest dynamism ratings in the verbal-vocal condition, similar competence and trustworthiness ratings in the nonverbal-verbal and nonverbal-vocal conditions, and maintained evaluation ratings in all three two-channel conditions. The importance of each channel varies from factor to factor and between styles.

The divergence in results between Mehrabian's work and the present study was expected. While Mehrabian et al conceptualized communication as inconsistent following "double-bind theory," the present study like Markel et al and Hart and Brown viewed communication as consistent between channels. Subjects were presented with the same speaker generating identical verbal cues, different vocal cues, and additionally, different nonverbal cues. The present study replicated the procedures and results of Markel et al, and Hart and Brown, but only in the verbal-vocal conditions.

According to Markel's hypothesis, competence ratings should be significantly different when the vocal channel is present, and evaluation ratings should be higher or lower when the verbal channel is present. These findings

were not reflected in the data. Competence ratings were significantly different among the two-channel conditions when the vocal channel was combined with the verbal channel; a significant difference between nonverbal-vocal and nonverbal-cerbal channels did not emerge. Evaluation ratings of the speaker were significantly different between the verbal-vocal condition, and the nonverbal-vocal and nonverbal-verbal conditions. No differences between the latter two conditions was revealed. Competence judgments emerged from vocal stimuli and evaluation judgments were interpreted from verbal content when verbal and vocal channels were simultaneously presented. However, the vocal channel did not influence competence judgments, and the verbal channel did not influence evaluation ratings when each channel was combined with the nonverbal channel. Markel's hypothesis appears to be limited to verbal-vocal two-channel stimulus situations.

These findings have a number of pedagogical implications for the communication profession. This study supports a previous conclusion by Pearce and Conklin (1971) that public address instructors should explore the differences between various styles of "satisfactory" delivery rather than simply trying to teach students how to eliminate characteristics of "unsatisfactory" delivery. The fact that audiences draw significantly different inferences about a source's credibility from the style of delivery in verbal-vocal communications should not be ignored. The data revealed that a speaker may enhance his credibility in a public speaking situation by presenting dynamic vocal cues with effectively persuasive verbal cues. However, if a speaker's intention is not to persuade, a dynamic style of delivery may be ineffective since evaluation or emotional response ratings were significantly lower for this style of delivery.

The two-channel communication research protocol is a valuable experimental tool in addressing research questions exploring the relationships among communication channels and perceptions of speakers. Careful consideration, however,

should be given to the theory-dependent units of observation to be analyzed before the methodology is employed.

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FIGURE 2

Two-Channel Cue Conditions, Style, and Subjects' Ratings of Perceived Competence

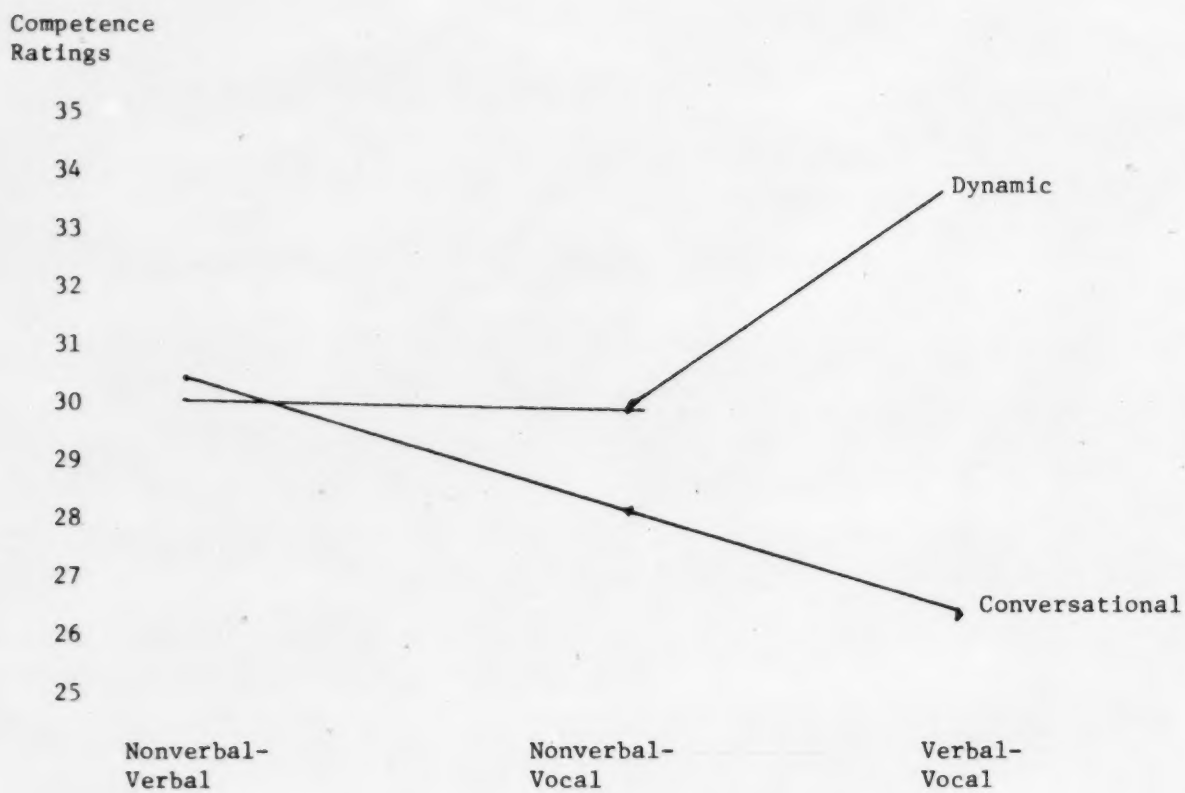

FIGURE 3

Two-Channel Communications, Style, and Subject Evaluations of a Speaker

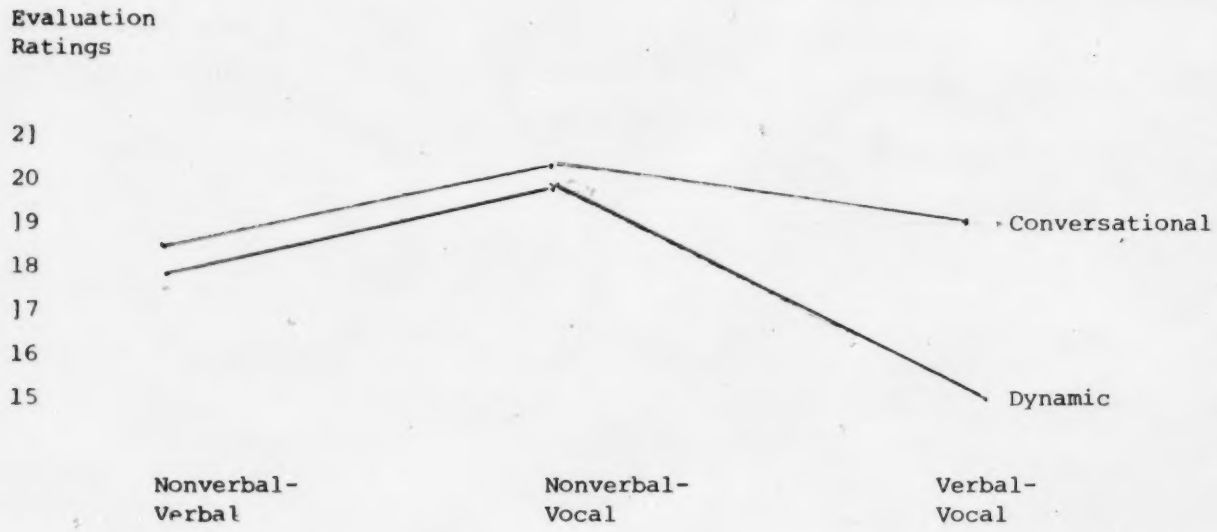

FIGURE 4

Two-Channel Communications, Style, and Trustworthiness

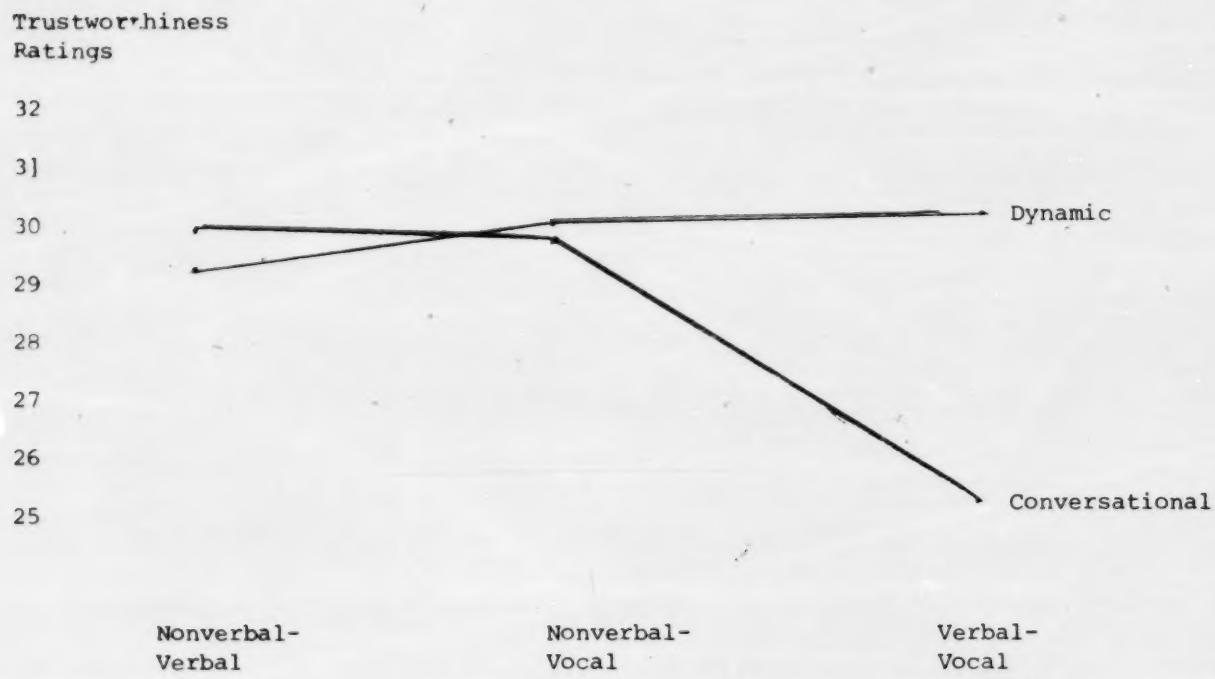

FIGURE 5

Two-Channel Communication, Style, and Evaluations of Verbal Content

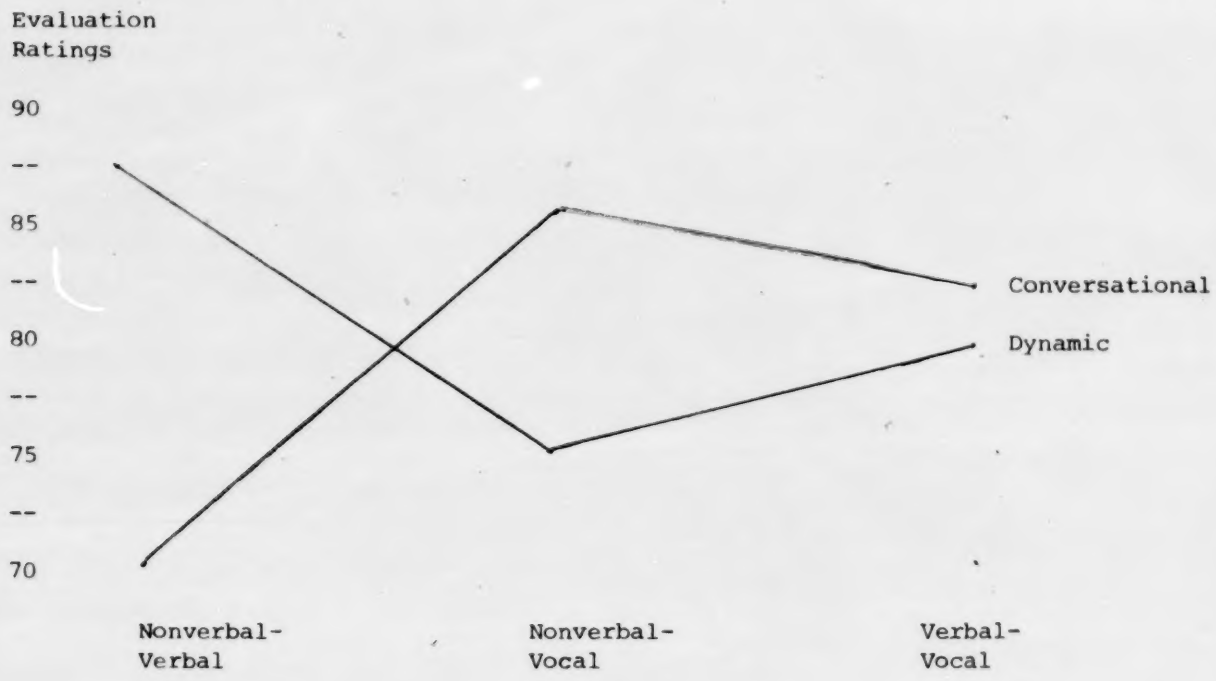

TABLE 1

Source Credibility

Factor Analysis - VARIMAX ROTATED FACTOR MATRIX

	DYNAMISM FACTOR 1	COMPETENCE FACTOR 2	EVALUATION FACTOR 3	TRUSTWORTHINESS FACTOR 4
safe-unsafe	0.05578	0.3998	0.51278	0.25671
trained-untrained	0.22616	0.82928	0.00096	0.03505
aggressive-unaggressive	0.82822	0.12633	-0.13584	-0.04677
good-bad	0.14365	0.57404	0.31078	0.31028
just-unjust	-0.00247	0.17573	0.28904	0.26852
experienced-inexperienced	0.28453	0.80311	0.01495	0.23846
emphatic-hesitant	0.55697	0.37209	0.00566	-0.04562
warm-cool	-0.04910	0.16064	0.80065	-0.04173
kind-cruel	-0.24500	-0.04129	0.71110	0.18673
skilled-unskilled	0.22535	0.78399	0.15454	0.29835
bold-timid	0.79723	0.23350	-0.18429	-0.00824
pleasant-unpleasant	-0.07776	0.26451	0.79567	0.14818
friendly-unfriendly	-0.07654	-0.01163	0.70016	0.18866
qualified-unqualified	0.14843	0.60231	0.15941	0.54071
active-passive	0.79061	0.16383	0.01459	0.12582
clean-dirty	-0.29657	0.24476	0.30019	0.39980
honest-dishonest	0.04760	0.09054	0.28651	0.57245
informed-uninformed	0.20377	0.40316	0.24184	0.61281
energetic-tired	0.72221	0.09169	0.04768	0.45013
valuable-worthless	0.21689	0.26897	0.23817	0.50725
masculine-feminine	0.34160	0.10438	-0.09017	0.23987

TABLE 2

Verbal Content

Factor Analysis - PRINCIPAL FACTOR WITH ITERATIONS: PA2

	EVALUATION FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
good-bad	0.59049	0.08879	-0.19862	-0.15628
beautiful-ugly	0.49333	0.22941	-0.29084	0.05866
progressive-unprogressive	0.65058	-0.15872	-0.11824	-0.15920
sweet-sour	0.51449	0.46178	-0.26644	0.15038
kind-cruel	0.62068	0.37512	-0.21223	-0.08185
clean-dirty	0.51879	0.26784	0.26349	0.13112
tasty-distasteful	0.60050	0.08555	0.26249	-0.08782
valuable-worthless	0.69995	-0.40142	-0.15352	0.21140
pleasant-unpleasant	0.77142	-0.08816	-0.12706	0.07009
right-wrong	0.71120	-0.34012	-0.07666	0.18082
happy-sad	0.54937	0.06619	0.07709	-0.19138
safe-unsafe	0.59867	0.10146	0.10125	0.13219
sacred-profane	0.49105	-0.26657	-0.16812	-0.03750
intelligent-unintelligent	0.58672	-0.16040	0.08692	-0.01556
nice-awful	0.79495	-0.03718	-0.06659	-0.17345
gentle-violent	0.46389	0.34114	0.19509	0.38445
fair-unfair	0.70213	0.09968	0.07291	-0.04513
sane-insane	0.60583	-0.07732	0.08165	0.03748
honest-dishonest	0.66445	-0.12531	0.14196	-0.07208
successful-unsuccessful	0.65184	-0.25397	0.20792	0.14771
healthy-sick	0.63313	0.14635	0.20957	-0.36630
Eigenvalue	8.10581	1.15008	0.65176	0.58800
Percent of Variation	77.20	11.00	6.20	5.60
Cummulative Percent	77.20	88.20	94.40	100.00

TABLE 3

Dynamism

Two-Way Analysis of Variance

Source	S.S.	df	F	Significance
Cues	397.084	2	7.132	0.001*
Style	1172.354	1	42.111	0.001*
C X S	58.253	2	1.046	0.354
Within	3619.159	130		
Total	5116.879	135		

TABLE 4

Newman-Keuls Test*

Dynamism

	Nonverbal-Verbal	Nonverbal-Vocal	Verbal-Vocal	Rowmean
Dynamic	26.308a	28.970	31.200a	28.618
Conversational	22.105b	21.500	26.160b	23.454
Column Means	24.545	25.397	28.711	

a, b = represent comparisons between two-channel conditions in the same style that are significant beyond the .05 level.

All comparisons between styles in the same two-channel conditions are significant beyond the .05 level.

*A harmonic n procedure was employed to resolve the problem of unequal cell frequencies.

TABLE 5

Competence

Two-Way Analysis of Variance

Source	S.S.	df	F	Significance
Cues	14.613	2	0.151	.860
Style	317.727	1	6.566	.012*
C X S	319.994	2	3.307	.040*
Within	6290.512	130		
Total	6960.020	135		

TABLE 6

Competence

Newman-Keuls Test

	Nonverbal-Verbal	Nonverbal-Vocal	Verbal-Vocal	Row Means
Dynamic	30.500	30.791	33.450a	31.443
Conversational	30.684	28.636	26.200a	28.303
Column Means	30.578	29.760	29.422	

a= represents a comparison between styles in the same two-channel condition which is significant beyond the .05 level

TABLE 7

Evaluation of the Speaker

Two-Way Analysis of Variance

Source	S.S.	df	F	Significance
Cues	187.113	2	3.849	.024*
Style	148.383	1	6.105	.015*
C X S	161.718	2	3.327	.039*
Within	3159.711	130		
Total	3645.249	135		

TABLE 8

Evaluation of the Speaker

Newman-Keuls Test

	Nonverbal-Verbal	Nonverbal-Vocal	Verbal-Vocal	Row Means
Dynamic	18.269	20.417	15.100a	18.100
Conversational	18.947	20.860	20.320	20.106
Column Means	18.555	20.631	18.00	

a= represents a significant difference from all other means in the matrix at a .05 level.

TABLE 9

Trustworthiness

Two-Way Analysis of Variance

Source	S.S.	df	F	Significance
Cues	88.572	2	1.387	.243
Style	124.613	1	3.903	.050*
C X S	288.826	2	4.523	.013*
Within	4151.098	130		
Total	4669.246	135		

TABLE 10

Trustworthiness

Newman-Keuls Test

	Nonverbal-Verbal	Nonverbal-Vocal	Verbal-Vocal	Row Means
Dynamic	29.231	30.708	31.600	30.414
Conversational	30.105	30.045	25.600a	28.379
Column Means	29.600	30.391	28.267	

a= represents a significant difference from all other means in the matrix at a .05 level

TABLE 11

Evaluation of Verbal Content

Two-Way Analysis of Variance

Source	S.S.	df	F	Significance
Cues	895.880	2	1.334	.267
Style	120.774	1	.360	.550
C X S	4113.563	2	6.127	.003*
Within	41627.770	124		
Total	46803.203	129		

TABLE 12

Evaluation of Verbal Content

Newman-Keuls Test

	Nonverbal-Verbal	Nonverbal-Vocal	Verbal-Vocal	Row Means
Dynamic	88.091a	77.500	87.875	84.289
Conversational	70.925a	87.136a	85.000a	80.866
Column Means	79.721	82.010	86.683	

a= represents comparisons between one mean and other means that are beyond .05 level